

## WHAT IS CLAIMED IS:

### 1. A breathing gas humidifier system comprising:

a replaceable and closed water reservoir with stable pressure, said water reservoir being provided for receiving a water reserve for the breathing gas humidifier system;

an intermediate storage unit with water, said intermediate storage being closed from the environment and being located under the water reservoir and having a connector;

a reservoir valve associated with said water reservoir;

an intermediate storage unit valve associated with said intermediate storage unit, said reservoir valve and said intermediate storage unit valve cooperating to provide a water flow connection between said water reservoir and said intermediate storage unit only when the water reservoir is received in said connector;

a heated evaporator chamber with an outlet connected to a breathing gas line and to a patient;

a water connection line located below a water level of said intermediate storage unit, said intermediate storage unit being connected via said water connection line to said heated evaporator chamber, said outlet opening above water in said heated evaporator chamber, the water evaporating at the boiling point passing via the outlet into the breathing gas line to the patient; and

a gas pressure equalizing line located between said heated evaporator chamber and said intermediate storage unit.

### 2. A breathing gas humidifier system in accordance with claim 1, further comprising: a

first restoring spring; a second restoring spring; and a plunger wherein said reservoir valve and said intermediate storage unit valve are each nonreturn valves cooperating with said first restoring spring and said second restoring spring respectively, wherein said reservoir valve and said intermediate storage unit valve are opened by actuating said plunger at one of said reservoir valve and said intermediate storage unit valve.

3. A breathing gas humidifier system in accordance with claim 1, wherein said evaporator chamber has a shield, evaporated medium flowing around said shield into the breathing gas line to the patient with said shield acting as a flow obstacle in front of said outlet.

4. A breathing gas humidifier system in accordance with claim 2, wherein said evaporator chamber has a shield, evaporated medium flowing around said shield into the breathing gas line to the patient with said shield acting as a flow obstacle in front of said outlet.

5. A breathing gas humidifier system in accordance with claim 1, further comprising a respirator generating a continuous respiration pressure connected to the breathing gas line.

6. A breathing gas humidifier system in accordance with claim 2, further comprising a respirator generating a continuous respiration pressure connected to the breathing gas line.

7. A breathing gas humidifier system in accordance with claim 1, further comprising an electronic unit connected to the heater via a heater line and an electrocapacitive humidity sensor

arranged in a mixing chamber of the breathing gas humidifier system, said electronic unit setting a value of a setting signal for the heating line of the heater after the comparison of the measured values for the breathing gas humidity with preset set points.

8. A breathing gas humidifier system in accordance with claim 1, wherein the water connection line has a diameter of 1 mm to 2.5 mm.

9. A breathing gas humidifier system in accordance with claim 1, wherein the water reservoir consists of polyethylene or polypropylene.

10. A breathing gas humidifier system in accordance with claim 9, wherein the water reservoir consists of polyethylene terephthalate (PET), a polycarbonate (PC) or an ethylene/propylene copolymer (PEP).

11. A breathing gas humidifier system comprising:  
a water reservoir enclosure for maintaining a stable pressure, said water reservoir enclosure receiving water as a reserve for the breathing gas humidifier system;  
an intermediate storage unit for receiving water from said reservoir enclosure, said intermediate storage being closed from the environment and being located below a level of said water reservoir enclosure and having a connector;  
a reservoir valve associated with said water reservoir;  
an intermediate storage unit valve associated with said intermediate storage unit, said

reservoir valve and said intermediate storage unit valve cooperating to provide a flow connection  
10 between said water reservoir and said intermediate storage unit to provide water up to a water  
level in said intermediate storage unit only when the water reservoir is received in said connector;

an evaporator chamber with an outlet connected to a breathing gas line and to a patient;  
a heater disposed in said evaporator chamber;

a water connection line located below a water level of said intermediate storage unit, said  
15 intermediate storage unit being connected via said water connection line to said heated evaporator  
chamber, said outlet opening being above a water level in said heated evaporator chamber,  
whereby the water evaporates at the boiling point passing to the outlet and into the breathing gas  
line to the patient; and

a gas pressure equalizing line providing a gas pressure equalizing connection between said  
20 heated evaporator chamber and said intermediate storage unit.

12. A breathing gas humidifier system in accordance with claim 11, further comprising: a  
first restoring spring; a second restoring spring; and a plunger wherein said reservoir valve and  
said intermediate storage unit valve are each nonreturn valves cooperating with said first restoring  
spring and said second restoring spring respectively, wherein said reservoir valve and said  
5 intermediate storage unit valve are opened by actuating said plunger at one of said reservoir valve  
and said intermediate storage unit valve.

13. A breathing gas humidifier system in accordance with claim 11, wherein said  
evaporator chamber has a shield, evaporated medium flowing around said shield into the breathing

gas line to the patient with said shield acting as a flow obstacle in front of said outlet.

14. A breathing gas humidifier system in accordance with claim 12, wherein said evaporator chamber has a shield, evaporated medium flowing around said shield into the breathing gas line to the patient with said shield acting as a flow obstacle in front of said outlet.

15. A breathing gas humidifier system in accordance with claim 11, further comprising a respirator generating a continuous respiration pressure connected to the breathing gas line.

16. A breathing gas humidifier system in accordance with claim 12, further comprising a respirator generating a continuous respiration pressure connected to the breathing gas line.

17. A breathing gas humidifier system in accordance with claim 11, further comprising:  
and electronic unit connected to the heater via a heater line and an electrocapacitive humidity sensor arranged in a mixing chamber of the breathing gas humidifier system, said electronic unit setting a value of a setting signal for the heating line of the heater after the comparison of the  
5 measured values for the breathing gas humidity with preset set points.

18. A breathing gas humidifier system in accordance with claim 11, wherein the water connection line has a diameter of 1 mm to 2.5 mm.

19. A breathing gas humidifier system in accordance with claim 11, wherein the water

reservoir consists of polyethylene or polypropylene.

20. A breathing gas humidifier system in accordance with claim 19, wherein the water reservoir consists of polyethylene terephthalate (PET), a polycarbonate (PC) or an ethylene/propylene copolymer (PEP).